

A Simple Network Management Protocol

Network Management Application

An Honors Thesis (HONRS 499)

By

Charles R. Eastus

Thesis Advisor

Dr. Paul Buis

Paul E. Buis

Ball State University

Muncie, Indiana

May, 1998

Sy Col
Thesis
11
0103
1007
11/11

Purpose of Thesis

This network management application was designed for use by network administrators to help them keep informed of the status of the machines operating on their network. These machines might either be workstations, PC's or printers. The only requirement is that the machine supports the SNMP protocol. This application allows the system administrator to obtain a view of the status of several of these machines on several subnets in a matter of seconds, saving time and effort.

User's Manual

Getting Started

To use this application, you must first run the setup program located on the first disk. This will extract all the required files, and set up this application on the start menu. After Setup has finished, select Start, Programs, and BSUSNMP. You are presented with a screen that resembles Figure 1. From this point, you must add machines to your document for the application to query. Select Add Machine from the Machines menu, and fill in the name of the machine in the dialog box (See Figure 2). You can either enter the IP address in dotted decimal notation (123.456.789.012), or depending on your network configuration, you may enter a name for the machine, such as *localhost.localnet*, or just *localhost*.

Figure 1. The initial screen

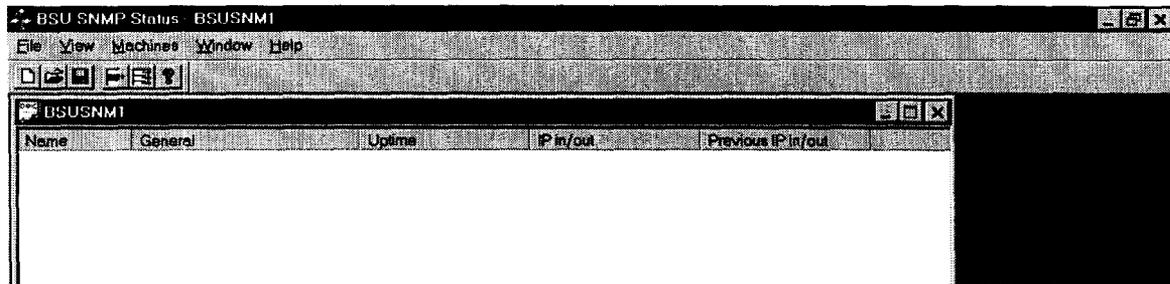
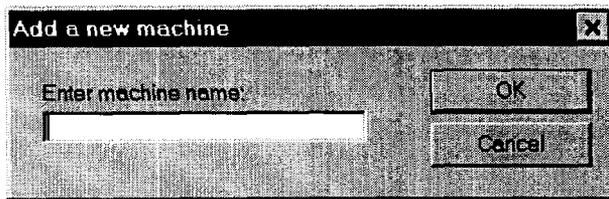


Figure 2. The Add Machine dialog box



If you wish to delete a machine from your document, you must first make sure that you have the machine to be deleted highlighted, then simply select Delete Machine from the Machines menu.

Updating Status On Machines

Once you have machines entered into your document, you may update the status on one or more of those machines by clicking on the machine in the Name column, and hitting the Query Selected Machines toolbar button (See Figure 3). You may update the status of all machines in your document by hitting the Query All Machines toolbar button (See Figure 4). Once the application has finished querying all the machines you selected, it will display the new status information in the list view as in Figure 5.

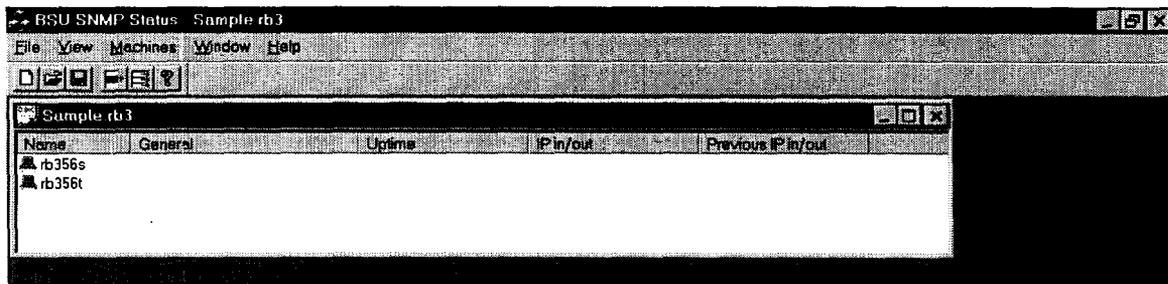
Figure 3. The Query Selected Machines toolbar button



Figure 4. The Query All Machines toolbar button



Figure 5. The updated status information



Saving And Retrieving Files

To save your current document, including all the machines listed in the display, you may select Save from the File menu, or hit the save button (See Figure 6). Saving your document will save you the work of adding those machines into a new document the next time you wish to query the status of those machines. Your saved files may be loaded at a later time, by either selecting Open from the File menu, or hitting the open button (See Figure 7).

Figure 6. The Save button



Figure 7. The Open button



A Brief History of Thesis

When I started working on this thesis, I had very limited understanding of the SNMP protocol, or of network theory in general. After spending many weeks learning about networks, network programming in general, and the SNMP protocol in particular, I was able to start working on design. I was very lucky to find code available at Carnegie Mellon University, which handled the basic SNMP tasks. This allowed me to build off this work and move on to other issues, without having to re-invent the wheel, so to speak. I could now use this basic functionality and incorporate it into my code to create a graphical application, which could be customized for the user.

This basic functionality required a few modifications, which required me to learn more of Microsoft Visual C++ and Data-Linked Libraries, of which I had little knowledge. Fortunately, my Software Engineering project was being written in Microsoft Visual C++, and I was able to use knowledge learned in one project to benefit the other. The fact that I was taking Software Engineering at the same time was also a disadvantage, since Software Engineering required a significant amount of time, time which I would have liked to have spent on this thesis.

After completing the application, I needed to install Microsoft's SNMP Agent on the computers in the lab for which the application was intended to be used, for a test. Mary Meadows, the system administrator, was pleased with my work, and was looking forward to installing the application.

Acknowledgements

I would like to thank my advisor Dr. Buis and Mary Meadows for all the help they have given me in designing, creating, and testing this application. I would also like to thank Ryan Troll for use of his code.